

**THE  
HANDLING  
OF THE  
AFRICANIZED HONEYBEE  
BY THE  
PANAMA CANAL COMMISSION**

*Gift of the Panama Canal Museum*



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THE HANDLING OF THE AFRICANIZED  
HONEYBEE BY THE PANAMA CANAL COMMISSION

AMERICAN  
FARM BUREAU RESEARCH  
FOUNDATION  
"AFRICANIZED HONEYBEE SYMPOSIUM"  
ATLANTA, GEORGIA  
FEBRUARY 11-12, 1986

ERNESTO CORDOVEZ D.  
ASSISTANT CHIEF  
SANITATION AND GROUNDS MANAGEMENT DIVISION  
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APO MIAMI 34011-5000



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THE HANDLING OF THE AFRICANIZED  
HONEYBEE BY THE PANAMA CANAL COMMISSION

A. INTRODUCTION

1. The Isthmus of Panama is a narrow strip of land situated in an east-west direction and is bordered by Costa Rica to the west and Colombia to the east.
2. The Panama Canal Commission, an agency of the Executive Branch of the United States Government, was established by the Panama Canal Treaty of 1977. The Commission functions under the Panama Canal Act of 1979. The Commission's mission is to manage, operate and maintain the Panama Canal, its complementary works, installations, and equipment, for the safe, efficient and orderly transit of vessels in the service of international maritime trade.
3. The Canal is a lock-type waterway and runs in a northwest-southeast direction for approximately 51 miles with the Atlantic Ocean at the north and the Pacific Ocean at the south. The city of Colon with a population of 70,000 inhabitants, is located adjacent to the Atlantic entrance. Panama City, the capital of the Republic of Panama with 700,000 inhabitants, is near the southern entrance of the Canal and is located at 9° north of the Equator and 79.6° west longitude, almost due south of Miami, Florida.

The Canal is in operation 24 hours per day. In Fiscal year 1984 an average of 31.2 vessels transited the Canal daily, for a total of 11,384 transits during the year.
4. The Panama Canal Commission has three operating bureaus (Marine,



Engineering and Construction, and the General Services) and a number of management and administrative offices. I am the Assistant Chief of Sanitation and Grounds Management Division, a division of the General Services Bureau, responsible for environmental sanitation within the Panama Canal area. The Sanitation and Grounds Management Division is also responsible for the insect and rodent control programs, the maintenance of grounds, the landscaping of areas, the operation of two sanitary landfills and monitors all refuse collected within the Canal housing and operating areas.

B. AREA, POPULATION AND PHYSICAL CHARACTERISTICS OF THE PANAMA CANAL AREA

1. Population and Work Force:

The population of the Panama Canal Area consists of approximately 40,000+ residents. The Panama Canal Commission population consists of approximately 4,700 residents, and the everyday civilian work force of the Commission consists of 7,561 full-time employees.

2. Housing and Industrial Areas:

There are nine residential areas under the management of the Panama Canal Commission. On the Pacific side of the Isthmus are Ancon, Balboa, Diablo Heights, Los Rios/Corozal and Gamboa, and located on the Atlantic side of the Isthmus are Cristobal, Margarita and Gatun.

Most of the employee housing units are either one story duplexes or two story multi-family apartment units. Some office buildings consist of one to three story units.

The industrial areas associated with the waterway are located in the immediate vicinity of the canal. These units are responsible for the





maintenance and improvements of the waterway, including dredging, aquatic weed and pollution control, aids to navigation, emergency rescue and salvage service, the operation of a shipyard and a dry dock for maintenance of Commission floating equipment. Public utilities include water purification and electric power, sewage plants and communications systems.

As a cooperative effort, with the Panama Bomberos, control has been carried out in former Panama Canal townsites which have reverted to Panama as a condition of the treaty such as Paraiso, Pedro Miguel on the Pacific side and Coco Solo, France Field, Mt. Hope, Mindi and Rainbow City on the Atlantic side. U.S. military entomologists and engineering pest control units and their bee control personnel have handled all cases within the various Panama Canal Area Defense Sites which include Fort Clayton, Fort Kobbe, Fort Amador, Albrook Air Force Station, Howard Air Force Base, Rodman Naval Station, Fort Davis, Fort Espinar, Fort Sherman and their military residential areas on both sides of the Isthmus.

### 3. Climate - Rainfall

The year is divided into a well-defined dry and wet season. The dry season extends from January through April when only small amounts of rainfall occur. The wet season occurs during the remaining months from May to December with an occasional sunny day scattered within. The monthly distribution of mean annual rainfall in Cristobal (Atlantic coast) Madden Dam (mid-distance) and Balboa Heights (Pacific coast) areas, in inches, based upon past records is as follows:

	<u>Cristobal</u>	<u>Madden Dam</u>	<u>Balboa Heights</u>
Mean Annual	129.43	96.69	70.24
Maximum Year	183.41	152.04	96.37
Minimum Year	86.54	57.08	45.58



#### 4. Climate - Temperature

The air temperature variations in the Panama Canal Area throughout the year are moderate, with the highest mean monthly temperature occurring in April when the sun is directly overhead (latitude 9° North) and the cooling effect of the wet season is absent. The lowest temperatures are found during the month of November, due principally to the occurrence of daily rains. Comparative mean monthly air temperatures in °F found in the Cristobal, Madden Dam, and Balboa Heights, areas are as follows:

	<u>Cristobal</u>	<u>Madden Dam</u>	<u>Balboa Heights</u>
Mean Annual	80.5	79.3	80.4
Maximum Year	84.0	82.8	84.7
Minimum Year	76.5	75.6	77.0

#### 5. Climate - Relative Humidity

The maximum relative humidity levels are found during the wet season in the month of November, and the minimum levels in March, during the dry season. The mean annual relative humidity is 83 percent and the mean monthly relative humidity in the region ranges from a minimum of 75 percent to a maximum of 90 percent.

#### 6. Climate - Winds

The dry season (January through April) is the season of strong winds. During this period, trade winds blow from the North and Northeast 90 percent of the time and have an average velocity of 15 miles per hour. Other dry season winds, locally called "northers" average 30 miles per hour and have attained at times a maximum velocity of 59 miles per hour.



## 7. Vegetation

The Panama Canal Area is bordered by patches of tropical rain forest. As in a typical tropical rain forest, trees in the area number more than 100 species per 2½ acres at times. Along both coasts, extensive mangrove swamp areas are present near the mouths of the principal rivers and streams.

### C. AFRICANIZED BEE CONTROL - PANAMA CANAL COMMISSION

1. A plan for handling Africanized bees within the Panama Canal Commission areas was developed by the Sanitation and Grounds Management Division in early 1982. The plan was coordinated with the U.S. armed forces and was primarily designed to protect the health and welfare of the human and animal population in the Panama Canal area and within military posts, and also of personnel operating transiting vessels within Canal waters. It was hoped that such control would assist in slowing the spread of African bees and would aid in the quarantine of international shipping. All bees found on board ships were to be eliminated to keep these insects from being carried from the Canal to other ports of call.

Actions of all Panama Canal Commission units were aimed at the control of the bee population within the areas under its responsibility to protect the public health and welfare of their employees and their families. This included orientation of all employees and residents, training of specialized bee control teams, implementation of an "action plan" by all Commission units, the establishment of a reliable laboratory identification system, and a functioning centralized reporting system for all bee sightings. Recommendations also were developed to advise the public of what to do in case of bee stings and massive attacks by disturbed colonies of these aggressive





insects.

2. The Sanitation and Grounds Management Division has a professional staff that include a sanitary engineer, a medical entomologist, agronomists and environmental health technicians, who, along with a trained labor force have extensive experience in controlling mosquitoes, bees, wasps and other insects. Division resources include trucks with hydraulic boom baskets, power sprayers and a variety of grounds care and landscaping equipment plus a variety of EPA approved chemicals to provide efficient and effective insect control.

3. In February of 1982, a beekeeper in the small town of Santa Fe in Panama's Darien province, first detected that bees in his hives were more aggressive than normal. Laboratory examination showed that the bees were undoubtedly Africanized. The bees invaded Panama by crossing the border from the Republic of Colombia. The Commission's plan to deal with this new public health threat was developed by the staff of the Sanitation and Grounds Management Division and the detailed procedures were written in final form by Mr. E. Cordovez D., who was the Chief of the Grounds Management Branch. Thus a Commission-wide bee reporting network was established and special procedures were outlined for the control of all honey bee swarms and nests both during and after regular working hours. Specific reporting procedures were given to all Panama Canal shipping agents to assure all shipboard bee incidents were immediately reported and that all bees were promptly eliminated before the vessels departed Canal waters.

4. Precautionary instructions were issued to all Commission employees and residents and orientation briefings on Africanized bees were given to both





Canal employees on the job and to the general public beginning in April 1982. Dr. David W. Roubik, Smithsonian Tropical Research Institute expert on Africanized honey bees, Dr. Melvin M. Boreham, our entomologist, several staff agronomists, including myself, U.S. Army entomologists, and officials of the Government of Panama's Ministry of Agriculture of Panama, participated in many of these public presentations to community and civic groups.

5. A Commission-wide notice to all employees, directed that they should report all sightings of bees encountered on the job and during non-duty hours. Letters were sent to all residents within Commission housing areas advising them how and where to report sightings of Africanized bee nests or swarms. The local Department of Defense school system also made similar requests for reporting sightings of bees during special audiovisual presentations on Africanized bees given to their students.

6. Panama Canal area residents and employees and the military personnel and the civilian component were involved in a massive "citizen awareness" plan through extensive and concentrated information put out by the local radio and television stations and by the respective agency newspapers. The Panamanian news media also provided an avenue for the dissemination of information concerning Africanized bee reporting and control procedures to PCC employees and the public. In retrospect, I believe that this was one of the most effective measures we used in this program.

7. Working in collaboration with Dr. Roubik, Dr. M. Boreham, implemented a new simplified and accurate method to discriminate Africanized bees from European honey bees. All bees killed during Commission control operations



- 8 -

were submitted to the Entomology Unit lab where they were dissected and measured by specially equipped microscopes. These data along with other pertinent information were entered by Dr. Boreham into a computer database to keep track of each incident for ongoing and future data analysis. This system has allowed us to document all cases of Africanized bee control within Commission areas and on posts under the control of the U.S. Army and Air Force since bee swarms were first sighted on the Atlantic side Army base of Ft. Davis on March 25, 1982. This analysis has been written into a scientific paper by Dr. Boreham and Dr. Roubik and this manuscript will soon be submitted to the Entomological Society of America for publication.

8. Our Division staff also developed improved bee control techniques and trained several specialized bee control teams with special emphasis on how to handle aggressive nests in residential areas and on what procedures should be used on transiting vessels in order to eliminate swarms on ships in Canal waters. These "SWAT" teams have been a very effective fast-response measure when the bees have become immediate threats in residential areas, office buildings and on transiting ships.

9. The Commission's response to this new public health problem has been a complete success. Credit must be given to the foresight and support of top management who provided adequate resources. To date, although several stinging incidents have occurred in outlying areas, the overall effect upon our Commission employees, their families and the U.S. military stationed on defense sites near the Panama Canal, has been greatly lessened due to our timely and intensive 24 hour of Africanized bee control within the Panama Canal area. A critical component to our success though, was the complete



cooperation of our employees, the general public and Canal shipping customers in promptly reporting sightings and the prompt response time of our control teams in the safe and efficient destruction of every Africanized bee swarm and colony encountered.

D. CHRONOLOGICAL EVENTS

Administrative

1. March 12, 1982: the Sanitation and Grounds Management Division proposes a basic action plan for the reporting and control of the Africanized bee in residential and industrial sites under the administration of the Panama Canal Commission.
2. March 19, 1982: Panama Canal Commission and the U.S. military establish specific procedures for the handling of the Africanized honeybee in the Panama Canal Area.
3. April 28, 1982: staff and operational units of the Sanitation and Grounds Management Division receive operational procedures and instructions on the handling of the Africanized bees.
4. May 5, 1982: PCC Division Supervisors, Office of Ombudsman, and U.S. military receive copies of our recommendations on the handling of Africanized bees.
5. May 1982: "Citizen Awareness" information was released by local radios, television and respective agency newspaper, to alert the public of the imminent arrival of Africanized bees.



6. May 25, 1982: our division field units receive internal written procedures for the destruction of Africanized bees in the Panama Canal Commission.
7. May 1982: Residents Advisory Committee Atlantic and Pacific receive first hand information on the imminent arrival of Africanized bees in the Canal Area.
8. June 10, 1982: the Panama Canal Commission appoints a representative to Panama's "National Committee for the Control and Handling of the Africanized Honeybee in Panama".
9. August 12, 1982: Standard Operational Procedures for the Panama Canal Commission were approved.

#### Honeybee Sightings

1. February 1982: Africanized bees were first reported by a beekeeper in a small town of Santa Fe, Province of Darien bordering Colombia. Santa Fe is located some 250 kms. from Panama City.
2. March 3, 1982: an Africanized honey bee swarm was destroyed in the Estadio Revolucion, Panama City.
3. March 25, 1982: Military control teams destroyed an Africanized honey bee swarm in Fort Davis.
4. April 24, 1982: PCC control teams destroyed an Africanized bee swarm in Coco Solo (former PCC town).





5. August 18, 1982: PCC control teams destroyed two swarms on a transiting ship on the Pacific entrance of the Canal.

6. March 1983: a soldier was hospitalized for 11 days after suffering approximately 600 stings during an attack by Africanized bees at Empire Range while on military maneuvers.

E. TOTAL AFRICAN BEES HANDLED IN PANAMA AND THE PANAMA CANAL AREA

1. Panama Canal Area (PCC - U.S. Military)

Period: March 1982 - December 1985

Bee swarms/nests	Total	1988 <sup>1</sup>
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2. Republic of Panama (swarms)<sup>2</sup>

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
January	-	385	353	406
February	18	556	504	474
March	32	767	839	623
April	70	533	363	703
May	119	584	513	275
June	103	688	725	272
July	83	818	340	362
August	232	1,095	346	418
September	179	1,153	310	399
October	195	1,318	316	316
November	207	259	205	314
December	<u>226</u>	<u>170</u>	<u>184</u>	<u>392</u>
Total	1,464	8,326	4,998	4,983

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<sup>1</sup>Entomology Laboratory, Sanitation and Grounds Management Division; Total transiting ships: 44 (does not include bees handling in PCC floating equipment).

<sup>2</sup>Ministry of Agriculture (MIDA)



3. Panama City Bomberos (Fire Department) (swarms)<sup>3</sup>

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
January	-	52	143	140
February	-	206	266	147
March	-	376	537	187
April	-	119	116	223
May	-	104	203	101
June	-	149	272	70
July	7	223	77	90
August	45	449	148	111
September	49	333	176	190
October	81	170	108	92
November	96	92	132	87
December	54	83	105	80
Total	<u>332</u>	<u>2,356</u>	<u>2,283</u>	<u>1,518</u>

From July 1982 through December 1985 a total of 157 firemen received medical treatment due to multiple bee stings.

4. Bee hives and honey production in the Republic of Panama<sup>4</sup>

	<u>1983</u>	<u>1984</u>
Bee hives (units)	21,680	13,969
Honey production (gallons)	172,440	55,876

% Drop since the arrival of the African honeybee:

Bee hives: 35.5% Decrease

Honey: 67.5% Decrease

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<sup>3</sup> Cuerpo de Bomberos de Panama (Panama City Fire Department)

<sup>4</sup> Ministry of Agriculture (MIDA)



I thank Dr. Melvin M. Boreham, for editorial input, and Mr. Timothy Corrigan and Mr. Pedro Arenas, for their assistance in the preparation of this paper.

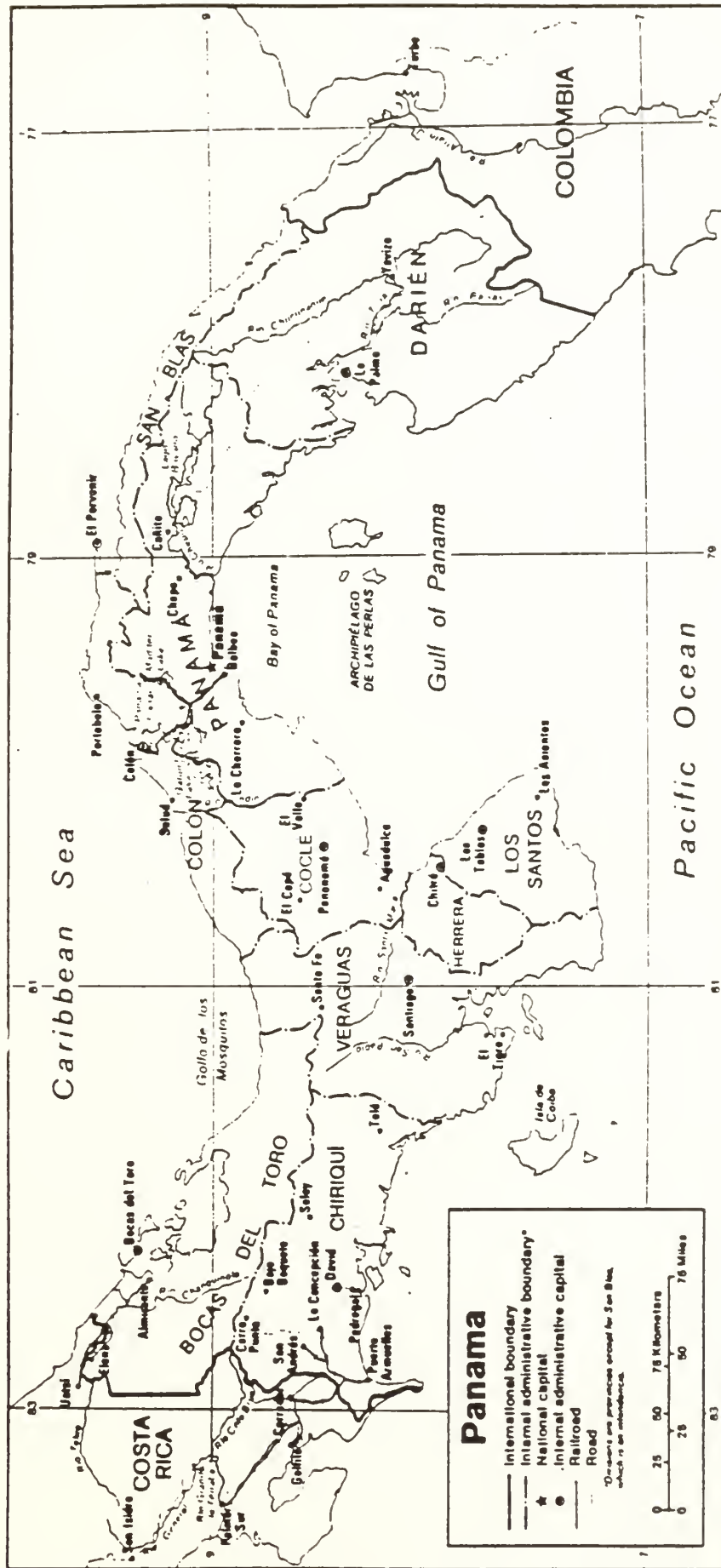
Ernesto Cordovez D., Assistant Chief  
Sanitation and Grounds Management Division  
January 1986









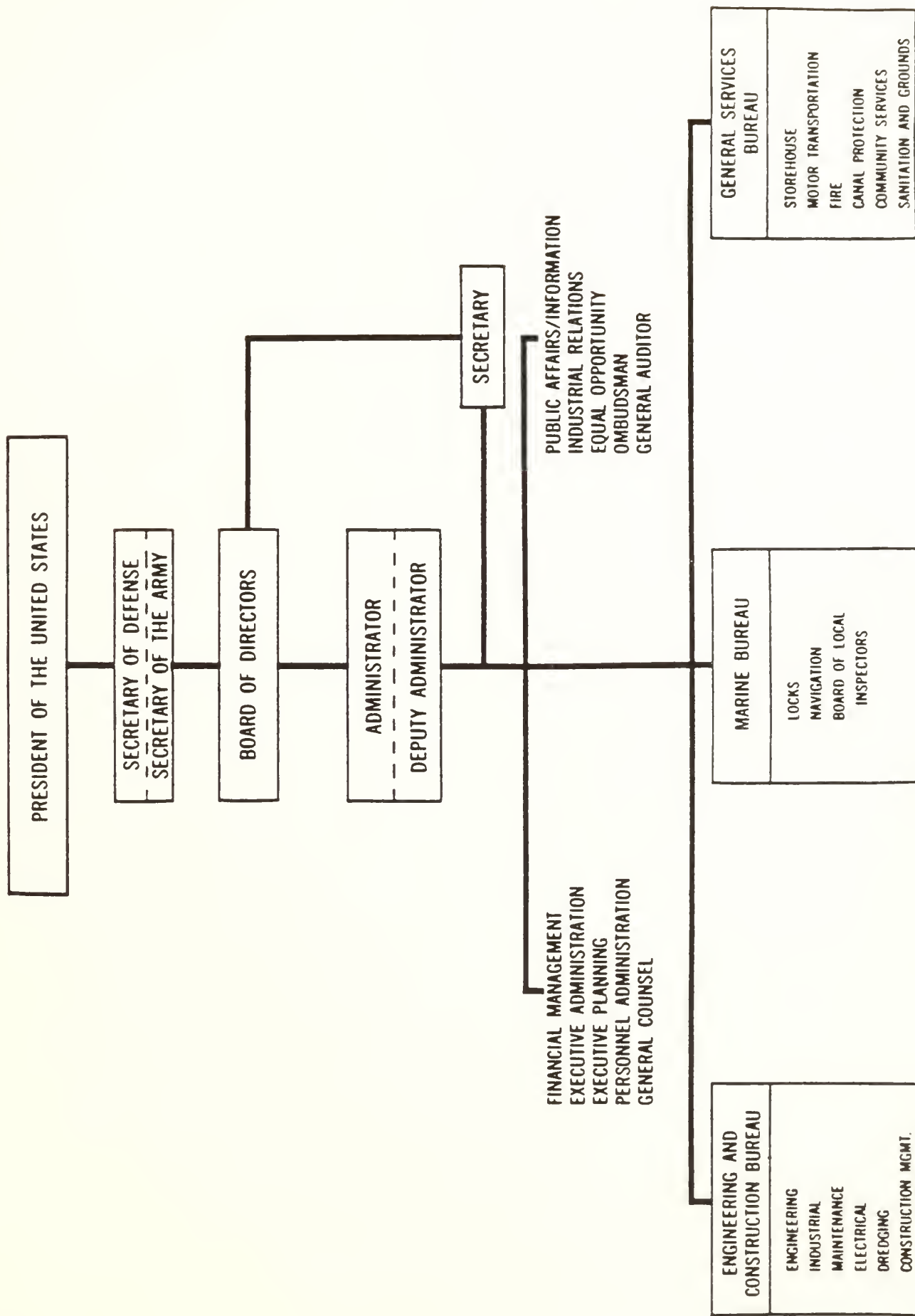








# PANAMA CANAL COMMISSION





# SANITATION AND GROUNDS MANAGEMENT DIVISION

The Sanitation and Grounds Management Division is responsible for environmental sanitation, insect and rodent control, sanitation and sanitary engineering, the general care of grounds, landscape maintenance, operation of sanitary landfills, and the monitoring of refuse collection within the Commission housing and Canal operating areas.

CHIEF, W. S. SWEENEY  
ASST. CHIEF, E. CORDOVEZ D.

GROUNDS MANAGEMENT BRANCH  
CHIEF, L. PEREZ

Responsible for grounds care, operation of refuse disposal facilities, vegetation control supporting transit operations, monitoring and support of refuse collection and technical assistance on matters of agronomy

SANITATION MANAGEMENT BRANCH  
CHIEF, D. LARACUENTE

Responsible for environmental sanitation on the Canal operating area and employee housing areas, including mosquito and rodent control, food sanitation, and monitoring drinking water quality

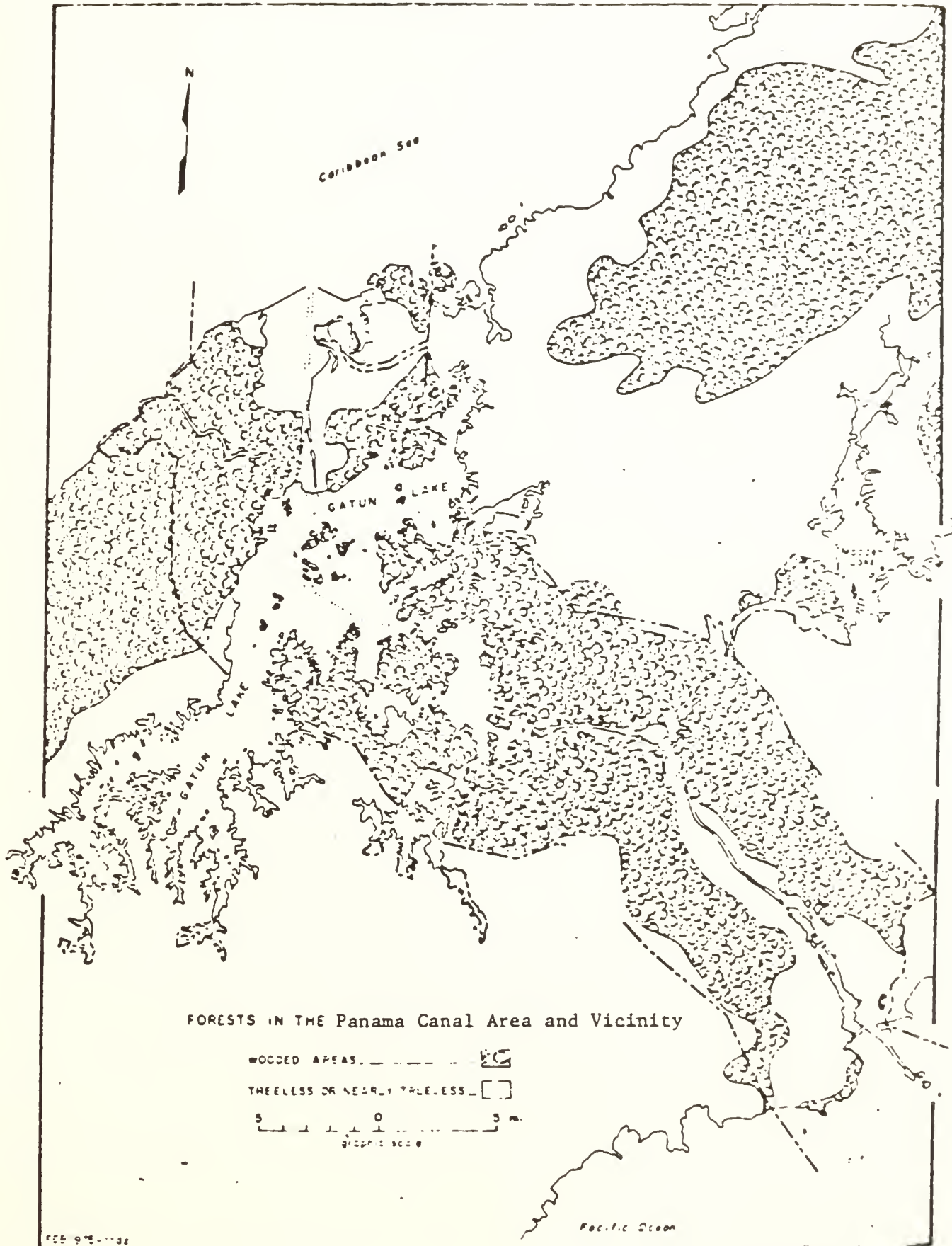
ENTOMOLOGY UNIT  
MED. ENTOMOLOGIST, DR. M. M. BOREHAM

Responsible for the surveillance of insect vectors of disease and technical studies related to improvement of control measures for plant pests and insects of public health importance





# PANAMA CANAL AREA





## memorandum

DATE: March 12, 1982

REPLY TO  
ATTN OF: Chief, Grounds Management Branch

SUBJECT: Africanized Honey Bee - Action Plan

TO: General Services Director  
Through: Director, Logistic Services  
Chief, Sanitation and Grounds Management Division

Migratory swarms of the africanized honey bee were first sighted in Santa Fe, Province of Darien, Republic of Panama in February 1982, and again on March 3, 1982, in the Estadio Revolucion in Panama City.

The bee is expected to be in Panama Canal Commission towns within weeks. Its numbers cannot be estimated at this time but at the minimum rate of travel, 40 km in a single trip, and their rapid proliferation, will no doubt result in having swarms of bees in natural habitat of forests (hollow trees, holes in the ground) and cities (discarded containers, caves of roofs). This problem is not expected to become chronic at this time, nonetheless, the PCC authorities must recognize a potential danger and should be prepared to deal effectively with it in order to protect the population.

Action Plan

1. The Sanitation and Grounds Management Division is the only PCC unit capable of handling the removal or destruction of the africanized swarms which may be found in the PCC towns and adjacent forests since the division has the specialized personnel in the professional field (agronomists, entomologists) and a trained labor force (pest controllers, tree maintenance workers, and gardeners) who deal with wasp nests routinely. In addition, this unit has special equipment such as forestry trucks with telescopic boom, foggers, sprayers, etc., that is essential to the proposed action plan.

2. Train employees at all levels, professional and worker employees in the management of the domesticated (italian) bee (a more gentle type of bee). This will be accomplished by showing films<sup>(1)</sup> and providing training with bee hives that will be furnished by apiarists in the City. The purpose of this training is to expose employees to the routine handling of the domesticated bee, therefore, creating confidence and assurance. This will help when handling the more aggressive africanized bee. At the same time, it will allow employees to know the physical characteristics of the italian bee (queen, drones, workers) and will be able in the future to differentiate this bee from the africanized bee.

3. All employees participating will have to take an allergy test to assure he is not allergic to bee poison. Those employees proven to be allergic will not participate nor will they deal with the africanized bee.

4. Training will be made to small groups at a time and an expert apiarist will perform the training. (The undersigned will obtain the apiarist, bee hives, and will participate in the training).

5. The Division will purchase adequate equipment such as Bee Veils, cotton gloves, helmets, Bee smokers, from either Sears Roebuck or the Walter T. Kelly & Company in the

OPTIONAL FORM NO. 10  
(REV. 1-60)  
GSA FPMR (41 CFR) 101-11.6  
5010-114



SUBJECT; Africanized Honey Bee - Action Plan

Date: March 12, 1982

United States, and the coveralls in the Storehouse.

I am attaching Dr. David W. Roubik's report on the africanized bee for your information. As suggested, the PCC should educate the public through the news media.

The Health Bureau should identify and locate all residents allergic to bee poisoning. Future identifications could be made through the Housing census or at the in-time of arrival. The data should be kept up-to-date and the residents' home dwelling list should be furnished to this Division so that immediate response be made whenever bee swarms are sighted near their homes.

Based on the aforementioned, I recommend that this Division's Grounds Management Branch be the organization responsible to deal with this imminent problem. If approved, a detailed action plan will be made to implement suggested plan.

(1) I am an apiarist, and as such, have a video tape on the Apis mellifera (italian bee) in English and part of a tape on the africanized bee in Spanish.

(Signed)

Ernesto Cordovez D.

Encl: (1)

[Concur] [Non-concur]

(Signed)

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F. A. Cotton  
General Services Director  
Date:

BCD:ngm

cc:  
GSAN (2)





## memorandum

DATE: May 25, 1982

REPLY TO  
ATTN OF: Chief, Grounds Management Branch  
Through: Chief, GSAN

SUBJECT: Procedure for the destruction of Africanized bees

TO: All Units, GSAN

1. Trained employees from either Grounds or Sanitation Branches will handle all Africanized swarms/colonies reported during working days. Bee swarms will be destroyed the same day. Bee nests and colonies will be destroyed only at night, except in special cases.
2. Trained employees from the Sanitation Branch will handle all Africanized swarms/colonies reported during non-work days (Saturdays, Sundays, and holidays). In case of a swarm located in a highrise area, the Fire Department will be notified (telephone #119 or dial 0) with a request for necessary equipment to perform destruction.
3. Division supervisors in charge are:
  - a. Grounds Management Branch (Pacific) - L. F. Perez (252-3319)  
(Atlantic) - R. May (243-5253)
  - b. Sanitation Management Branch (Pacific) - D. Laracuenta (252-3243)  
(Atlantic) - J. Corrigan (246-7279)
4. Each responsible supervisor will have a second in command to replace him and supervise bee destruction in his absence.
5. When a bee call is received, the following action will take place:
  - a. The area will be inspected by a supervisor to determine whether it is a bee swarm/colony or wasp nest.
  - b. The supervisor will prepare the "swat team" and equipment for daylight control only in cases of swarms.
  - c. Residents and/or office personnel will be warned by the supervisor of the activity which will take place. In residential areas, a 200-meter (500 feet) perimeter warning area will be formed; in a public building, the entire building.
  - d. Residents/employees will be requested to remain inside their residence/office and advised when the action has ended.
  - e. Warning signs will be posted, using as a guide the perimeter area distances (paragraph 5c above).
  - f. The swat team will perform destruction of the swarm as soon as possible.





May 25, 1982

Subject: Procedure for the destruction of Africanized bees

g. A minimum of 10-30 dead bees will be collected and forwarded with pertinent information reporting the action to the Entomology Laboratory, Coco Solo, for identification.

h. Supervisors will follow up and recheck the area in which the bees were destroyed. Supervisors will report destruction if warranted.

6. In case of a bee sighting reported after working hours, the same procedure will be followed with regard to warning signs, destruction procedures, specimen collection, etc.

7. The Division Entomologist, Dr. Melvin Boreham, (tel. # 252-7984) will be kept informed by district supervisors of all activities in relation to the destruction of Africanized bees or colonies. District supervisors should, at all times, consult him for professional advice in these activities.

(Signed)

E. Cordovez D.

cc:

GSAG, Northern District (Mr. May)

GSAG, Southern District (Mr. Perez)

GSAS, Northern District (Mr. Corrigan)

GSAS, Southern District (Mr. Laracuenta)

Entomologist (Dr. Boreham)

GSAN - RF

GSAN - File



BASIC : SOP on Africanized Bee from GSAN dated 8/11/82  
SUBJECT : Procedure for dealing with Africanized Bees in Commission  
Areas.

(3) General Services Director  
Through: Chief, Sanitation and Grounds Management Division

1. Changes to the original SOP have been incorporated, and are reflected on page 2 of the SOP attachment.

2. I agree with the Director, Office of Health and Safety in his comments.

3. I would like to suggest though that the PIO advise residents by means of an article that if in doubt as to allergy on bee, wasp, hornest venom, he/she should consult a physician.

(Signed)  
Ernesto Cordovez D.  
Chief, Grounds Mgmt. Branch  
Sanitation & Grounds  
Management Division  
August 12, 1982

cc:  
GSAN  
GSAG (3)



## memorandum

DATE: August 27, 1982

REPLY TO  
ATTN OF: Acting General Services Director

SUBJECT: SOP for dealing with Africanized bees in Commission areas

TO: Heads of Bureaus, Divisions and Independent Units

The following SOP for handling Africanized bees within Panama Canal Commission areas is forwarded for your information and dissemination as deemed appropriate.

A. General

The Africanized honeybee arrived in Panama in February 1982. To date, cases of bee swarms have been reported and eradicated in the Atlantic area of the Panama Canal Commission. As the Africanized bee reproduces and migrates, it is expected that in the near future (summer of 1983) swarms and colonies will multiply to the extent that they will become a serious nuisance or hazard to residents and employees of the Canal operating and housing areas, and to crews of the floating support vessels and equipment and vessels transiting the Canal.

B. Purpose

These standard operating procedures are designed to protect the health and welfare of the human and animal population in the Panama Canal area, the health and welfare of the personnel operating transiting vessels, and to slow down or prevent the fast spread of the bee if detected and not controlled in vessels.

C. Scope

The procedures cover the concerted actions of all Panama Canal Commission units aimed at the control of the bee population within the aforementioned areas with its concomitant protection of the health and welfare of the population. These actions include, but are not limited to, the orientation of PCC employees and residents, training of specialized control teams, establishment of the responsibilities of concerned units, the establishment of a detection and reporting system, and indications as to initial and, when necessary, subsequent actions in case of bee stings.

D. Definitions

For the purpose of these operating procedures, the following definitions are applicable:

1. Africanized bee. Pure or hybridized strain of honeybee characterized by its indiscriminated aggressiveness towards humans and animals without apparent provocation or when disturbed.



Subject: SOP for dealing with Africanized bees in Commission areas

2. Protective equipment. Special headgear, footwear, gloves, and clothing designed for the handling of bees.

3. Eradication team. A group of personnel especially trained in the use of equipment and pesticides necessary for the elimination of bee swarms and colonies under any condition known or unforeseen.

4. First aid. Initial measures taken to alleviate the pain and discomfort caused by a bee sting. Normally taken on site or at the closest first aid station according to the person's reaction to the venom.

5. Medical treatment. Treatment given or authorized by a physician at the closest medical facility.

E. Responsibilities

1. Sanitation and Grounds Management Division

a. Receives and responds to reports of bees by residents, employees, or units of PCC.

b. Trains specialized teams to eradicate bee swarms or colonies reported within the PCC areas.

c. Trains teams for other PCC units which consider that, by virtue of their particular function, working hours, or working areas, they are justified.

d. Procures all the protective equipment necessary for GSAN specialized team. Passes on all necessary procurement information to other units when requested.

e. Establishes pesticide(s) and formulation(s) to be used in eradication of bees. Passes on the information to other units when requested.

f. Makes final identification of the bee species at the entomology laboratory, Coco Solo Hospital.

2. Office of Health and Safety

Determines the extent of treatment to be administered to an employee or victim of bee sting in distant, isolated work areas and the type of medication that will be part of the first aid kits for such employees.





GS

Subject: SOP for dealing with Africanized bees in Commission areas

F. Procedures1. Bee Swarms or Colonies in PCC Housing and Operating Areas

a. Supervisors of operational units (Electrical, Water and Lab, Dredging, Industrial, Maintenance, Locks, Navigation Divisions) will be trained by the Sanitation and Grounds Management Division and the Office of Health and Safety bee control experts.

b. The training will consist mainly of protecting the employees when encountering Africanized bee swarms or colonies in their daily operations.

c. When a bee swarm or bee colony is spotted, the employee should keep away from the area, and the employee's unit should call:

Grounds Management Branch (Pacific) .... 252-3319 or 7908  
(Atlantic) .... 246-5253 or 5259

Sanitation Management Branch (Pacific)... 252-3464 or 3243  
(Atlantic)... 246-7279 or 7466

During working hours, 7 a.m. to 3:30 p.m.

After working hours and weekends and holidays, call:

Emergency Operator "O"

For the purpose of reporting, all bee swarms or colonies should be considered as "Africanized" and reported. Determination as to control will be made by the eradication team supervisor. Under no circumstances should the employee molest or attempt to destroy the swarm or colony.

d. What to do if stung by a bee:

- (1) Remove bee stinger by gently scraping with fingernail or a blade to prevent further venom injection from the attached venom sac.
- (2) Apply ice pack to the wound.
- (3) Reserved
- (4) Reserved
- (5) In an employee shows any kind of abnormal reaction to the sting (very itchy, very red, or large swelling) or if the individual has a history of allergic reaction to insect bites or any other allergy, he/she should be rushed to a hospital.



GS

Subject: SOP for dealing with Africanized bees in Commission areas

e. If an employee/individual has ever had a reaction to a bee sting he/she should consult a doctor, who can prescribe a kit with medications which will help to limit the reaction from a sting (venom) until medical assistance can be obtained.

f. When the eradication team arrives, the employee should follow the safety instructions issued by the team supervisor.

2. Swarms on Board Transient Vessels or Other Floating Support Equipment (May be included in the Marine Bureau Vessel Emergency Reaction Plan if deemed convenient.)

a. PCC floating equipment captains and PCC pilots aboard transiting vessels should report to MTC when a bee swarm is found on a ship or other floating equipment.

b. The Marine Traffic Control should call one of the following units:

Grounds Management Branch (Pacific) .... 252-3319 or 7908  
(Atlantic) .... 243-5253 or 5259

Sanitation Management Branch (Pacific).. 252-3464 or 3243  
(Atlantic).. 246-7279 or 7466

During non-work hours, weekends and holidays, call:

Emergency Operator "'0"

c. Shipboard callers should follow these instructions:

- (1) Shall not attempt or allow others to attempt to handle the bees
- (2) Estimate the size of the swarms in terms of gallon size, i.e., 1, 2, 3 gallons.
- (3) Give the location of the swarms and advise if the ship has means to reach the swarm (such as ladders, scaffolding, etc.) or if additional equipment will be required to reach the swarms.

d. After receiving a call from MTC, the Sanitation and Grounds Management Division will:

- (1) Prepare the eradication team and equipment.
- (2) Transport the team and equipment to the area designated by MTC and back at the completion of the job. Transportation from shore to ship and back will be handled by the Navigation Division.



August 27, 1982

GS

Subject: SOP for dealing with Africanized bees in Commission areas

- (3) The team supervisor will issue safety instructions to personnel on board the ship before the start of the eradication.
- (4) After the eradication, the team will collect specimens and return to its regular duties.

(Signed)

M. P. Gordon

Distribution B



September 14, 1982

Mr. José Sanjur  
National Committee for the Control and Handling  
of the Africanized Bee (CAA)

Dear Mr. Sanjur:

Enclosed are two documents: the first pertains to the formation of "Local Committees," and the second is a "Guideline for the Control and Handling of the Africanized Bee in the Republic of Panama."

Please make any additions or changes that you or the members of the CAA may deem appropriate to effect in Panama the mechanisms necessary for guaranteeing public health and safety, (in response) to the problem created by the arrival and colonization of the Africanized Bee.

Sincerely yours,

(signed)

E. Cordovez D.  
Chief, Grounds Management Branch  
Panama Canal Commission  
Member of the Committee for the  
Control and Handling of the Africanized  
Bee in Panama

ECd:mr





Local Committees for the Control and Handling of the  
Africanized Bee in the Republic of Panama

Inasmuch as the africanization of beehives in Panama by the African Honey-Bee, Apis Melifera Adansonii, will continue colonization on a massive scale, the National Committee for the Control and Handling of the Africanized Bee (CAA), the highest Government organization for consultation on such matters, hereby nationally establishes a network of (local) city, community and hamlet organizations which will assist the (national committee) in its purpose:

Organization:

The Local Community Committee in each city, community, or hamlet shall consist of the following Government and private officials:

1. The mayor of the district, who shall be the Committee Chairman.\*
2. The highest-ranking officer of the Guardia Nacional.\*
3. The highest-ranking officer of the Fire Department.\* (In those communities where a Fire Department does not exist, this requirement is not applicable).
4. The highest-ranking official of the Ministry of Health.\*
5. The highest-ranking official of the Ministry of Education.\*

The mayor may appoint other organizations and/or private or civic entities to the Committee to aid in controlling and/or handling of the africanized bee at the community level.

Mechanism for the formation of Committees at local level:

1. The Chairman of the National Committee for the Control and Handling of the Africanized Bee shall request the creation of the committees by means of an official letter.
2. The district mayor shall be responsible for creating the committee and advising the National Committee for the Control and Handling of the Africanized Bee, no later than one month after receipt of the letter of request, of the names of the members of the local committee. He shall also report any difficulties encountered in the creation of the committee.

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\*In the major cities, such as Panamá, Colón, Santiago, David, and others, the Ministers of State of these entities shall designate a representative.



GUIDELINE FOR THE CONTROL AND HANDLING  
OF THE AFRICANIZED BEE IN THE  
REPUBLIC OF PANAMA

A. General. The Africanized Bee arrived in the Republic of Panama in February 1982. In view of the spread of this insect, on (date) , the Government of Panama, through Executive Decree \_\_\_\_\_, created the National Committee for the Control and Handling of the Africanized Bee (CAA).

The responsibilities of the CAA are: (include the Executive Decree)

B. Scope: This guideline covers the actions to be taken by the Local Committees for controlling and/or handling colonies or beehives in the towns of the Republic of Panama in order to guarantee public health, the welfare of the citizens, and safeguard the beekeeping industry in the Republic of Panama.

Such action includes, but is not limited to, orientation and dissemination of information to the public in general, in both urban and rural areas, training specialized extermination and/or collection teams, establishment of a system for detecting and reporting beehives and/or colonies in the communities.

C. Definitions:

1. Africanized Bee: Pure species of the honey-bee, characterized by indiscriminate aggression towards human beings and animals, with no apparent cause.

2. Protection Equipment: Garments such as a face mask for protection, shoes, gloves and clothing used for the handling of bees.

3. Extermination Crew : A group of employees specially trained in the elimination of beehives and bee colonies, in any type of known or foreseen situation.

4. Collection Crews: Beekeepers or officials of MIDA at the community level who may remove beehives and/or bee colonies which can serve to increase the beekeeping industry in the Republic of Panama.

5. First Aid: Immediate actions taken to lessen pain caused by bee stings. Generally such action is taken on site or at the nearest first aid station, taking into account the individual's reaction to bee poison.

6. Medical Treatment: Treatment given or authorized by a doctor.

7. Education and Dissemination: Actions to be taken by the CAA together with the Ministry of Education to keep students informed about the national program.



D. Responsibilities:

1. Local Committees:

(a) The local committees, chaired by the district mayor,\* shall be the entities for receiving and taking action on any reports of bees made by residents of the community. The mayor shall be responsible for informing the people of the office\* and telephone\* number for reporting complaints.

(b) The district mayor\* shall have at his disposal an extermination and/or collection crew duly trained by MIDA to perform bee exterminations and/or collections.

(c) After extermination or collection, 20 or 30 bees shall be collected and sent to the MIDA Laboratory at \_\_\_\_\_ (address) in \_\_\_\_\_ (place and city), in order to determine the bee species.

(d) The MIDA laboratories shall send a copy of the laboratory results to the CAA at \_\_\_\_\_ (address), so that the CAA may maintain records on the colonizing movement of the africanized bee in the Republic of Panama.

2. Ministry of Government and Justice

(a) Fire Department

(1) Trains, in conjunction with MIDA, the crews for extermination and/or collection of reported beehives or colonies.

(2) Trains, in conjunction with MIDA, other crews for extermination and/or collection as necessary because of special circumstances (i.e., the Panama Fire Department may train \_\_\_\_\_ (X) \_\_\_\_\_ community because it has no Fire Department and is isolated.

(3) Reports all cases of bee exterminations handled to the CAA.

(4) Shall have a budget with sufficient appropriations to procure equipment (clothing, gloves, face masks, fumigators, insecticides, etc.) to eradicate, control and handle beehives and colonies of the Adansonii within areas under their jurisdiction.

(b) Guardia Nacional

(1) Shall insure compliance with the directives issued by the CAA.

(2) Shall control the movement of colonies by means of their guard booths, and thus prevent beehives in areas colonized by the Adansonii

\*In communities which have a Fire Department, this organization will automatically be the Office for Complaints and Action.





from being transferred to areas free of the Adansonii. Movement of beehives shall be regulated by the CAA.

(3) Any other action that may be necessary to guarantee safety for all citizens.

3. Ministry of Health

The Ministry shall ensure all hospital centers maintain medications for treating citizens who have been stung by bees, who are allergic to bee venom, so that fatalities can be prevented.

4. Ministry of Education

The Ministry shall conduct an information dissemination campaign at all schools to teach students how to live with the Africanized bee in Panama.

5. Ministry of Agriculture and Livestock

(a) The Ministry shall train extermination and collection crews for the eradication and/or collection of beehives or colonies at the national level.

(b) The Ministry shall indicate the type of equipment to be used by the extermination and/or collection crews.

(c) The Ministry shall determine the type of pesticide and the formulas to be used for bee eradication.

(d) The Ministry shall identify the species of exterminated bees.

(e) The Ministry shall report all cases of bee exterminations to the CAA.

E. Procedure:

1. Any individual who detects beehives or bee colonies shall take the following action:

(a) In cities with Fire Departments:

(1) Call the Safety Officer of the Fire Department.

(2) Indicate the location of the colony/beehive.

(b) The Fire Department:

(1) Shall call the extermination crew.

(2) After extermination, they shall collect from 20 to 30 dead bees and send them to \_\_\_\_\_ (address) \_\_\_\_\_. The samples shall be placed in alcohol for preservation.





(3) The specimens will be forwarded with a letter containing the following information:

- . Date of extermination/collection
- . Place, city, and house number
- . Names of the extermination/collection crew
- . Method of extermination (insecticide used and % used)
- . other method used (explain)

(c) Communities that do not have a Fire Department:

- (1) Notify the mayor's office of the location of the beehive or colony.
- (2) The mayor shall take the required measure (either extermination and/or collection).
- (3) Will collect 20 or 30 dead bees and sent them to (address). The specimens shall be placed in alcohol for preservation.

(4) The specimens will be forwarded with a letter containing the following information:

- . Date of extermination/collection
- . Place, city, and house number
- . Names of extermination/collection crew
- . Method of extermination (insecticide used and % used)
- . other method used (explain).



# PANAMA CANAL COMMISSION

BALBOA, REPUBLIC OF PANAMA

November 15, 1982

## CAUTION NOTICE TO ALL RESIDENTS OF PANAMA CANAL COMMISSION QUARTERS

Subject: Procedures for the reporting of Africanized bees in the Panama Canal area

The Africanized honeybee arrived in Panama from South America in February 1982. Numerous cases of swarms and colonies of this aggressive bee have been reported and safely eradicated in the Panama Canal area.

Any time a resident sights a group of bees, wasps, or nests, the following steps should be followed as soon as possible:

1. Keep away from the area and immediately call:

During working hours (7:00 a.m. to 3:30 p.m.):

### Grounds Management Branch:

Pacific .....252-3319 or 7908

Atlantic .....243-5253 or 5259

### Sanitation Management Branch:

Pacific .....252-3464 or 3243

Atlantic .....246-7279 or 7466

After working hours, weekends, and holidays:

Emergency Operator "O"

2. What to do if stung by a bee:

a. Remove the bee stinger by gently scraping it to prevent further venom injection from the attached venom sac.

b. Apply ice pack to the wound.

c. If the stung person shows any kind of abnormal reaction to the sting (very itchy, very red, or large swelling) or if the individual has a history of allergic reactions to insect bites or any other allergy, he/she should be rushed to a hospital.

d. If an individual has ever had a reaction to a bee sting, he/she should consult a doctor, who can prescribe a kit with medication which will help to limit the reaction from a sting (venom) until medical assistance can be obtained.

e. When the Sanitation Management Branch or Grounds Management Branch eradication team arrives, residents should follow the safety instructions issued by the team supervisor.

3. The Sanitation and Grounds Management Division requests that residents familiarize themselves with these instructions. If you have pets confined to the yard or on a leash or chain, remember to assist your pet to escape from any bee attack, if you can do so safely.



PANAMA CANAL COMMISSION  
SANITATION AND GROUNDS MANAGEMENT DIVISION  
PROTECTIVE EQUIPMENT ISSUED TO AFRICANIZED  
BEE CONTROL TEAMS

1. One (1) set of regular clothing with long sleeve shirt.
2. One (1) coverall (green type over regular clothing).
3. One (1) Beesuit (white coverall over green coverall).
4. One (1) pair of leggings (around end of pants cuff, bee suit).
5. One (1) pair of rubber boots.
6. One (1) pair of leggings straps ( around end of sleeves).
7. One (1) respirator (to minimize inhalation of pesticide used).
8. One (1) pair of goggles (for eye protection).
9. One (1) sweat band
10. One (1) helmet
11. One (1) veil (over helmet, to protect face and neck).
12. One (1) pair of gloves (to be washed once application is made).  
(beekeepers glove to protect hands and arms against stings)  
If necessary, a pair of rubber gloves over bee gloves.

Masking tape handy to insure complete covering of veil over neck area and shoulders, or other exposed area of clothing.

WARNING: Make sure to leave no openings on protective wear for entrance of bees to sting any part of the body.

Items 2 through 12 will be provided by the Panama Canal Commission.



PANAMA CANAL COMMISSION  
SANITATION AND GROUNDS MANAGEMENT DIVISION  
ENTOMOLOGY UNIT

## HONEY BEE LABORATORY IDENTIFICATION

Location:	Building No.:	Collector(s):	Date of Collection:	Computer Entry Date:
Swarm Size (Gallons):	Nest Size (Gallons):	Insecticide (Type):	Time:	Smoker Used? <input type="checkbox"/> Yes <input type="checkbox"/> No
Bees controlled by: <input type="checkbox"/> SANITATION BRANCH <input type="checkbox"/> GROUNDS MANAGEMENT BRANCH				

REMARKS: .....

## LAB MEASUREMENT AND ANALYSIS

OCULAR MICROMETER READINGS  
OCULAR DIVISIONS

Bee No.	Wing Length	Wax Mirror Width
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Average: \_\_\_\_\_ Divs.      Average: \_\_\_\_\_ Divs.

Leitz Scope  
Div. Avg. (x) 1.0mm \_\_\_\_\_ mm (x) 0.25mm \_\_\_\_\_ mmAlternative Scope  
Div. Avg. (x) \_\_\_\_\_ mm \_\_\_\_\_ mm (x) \_\_\_\_\_ mm

## COMPARATIVE MORPHOMETRIC AVERAGES

Wing Length Mean	Wax Mirror Width Mean
EUROPEAN STRAIN	EUROPEAN STRAIN
9.12 mm	2.36 mm
AFRICANIZED STRAIN	AFRICANIZED STRAIN
8.65 mm	2.17 mm

## DISPOSITION OF SAMPLE

(Place an "x" in proper block)	YES	NO
Sample preserved in alcohol	<input type="checkbox"/>	<input type="checkbox"/>
Dissection slides retained	<input type="checkbox"/>	<input type="checkbox"/>
Sample of bees sent to S.T.R.I.	<input type="checkbox"/>	<input type="checkbox"/>

LABORATORY IDENTIFICATION  
OCULAR MICROMETER CALIBRATION DATA

## LEITZ DISSECTION SCOPE

1X Objective and 12.5X Ocular

1 division = 1.0 mm

4X Objective and 12.5X Ocular

1 division = 0.25 mm

## ALTERNATIVE MICROSCOPE

Make ..... Model .....

.....X Objective and.....X Ocular

1 division = .....mm

.....X Objective and.....X Ocular

1 division = .....mm

BEES DISSECTED BY: .....

Date: .....

Analysis of measurements and other characteristics indicate that the bees are:

☐ AFRICANIZED☐ INTERMEDIATE  
(F1 Hybrid)

Chief, Entomology Unit

☐ EUROPEAN

Date: .....

## OTHER LABORATORY OBSERVATIONS:

Queen found.....Drones present.....

Workers with: Wax.....Pollen.....

Other: .....

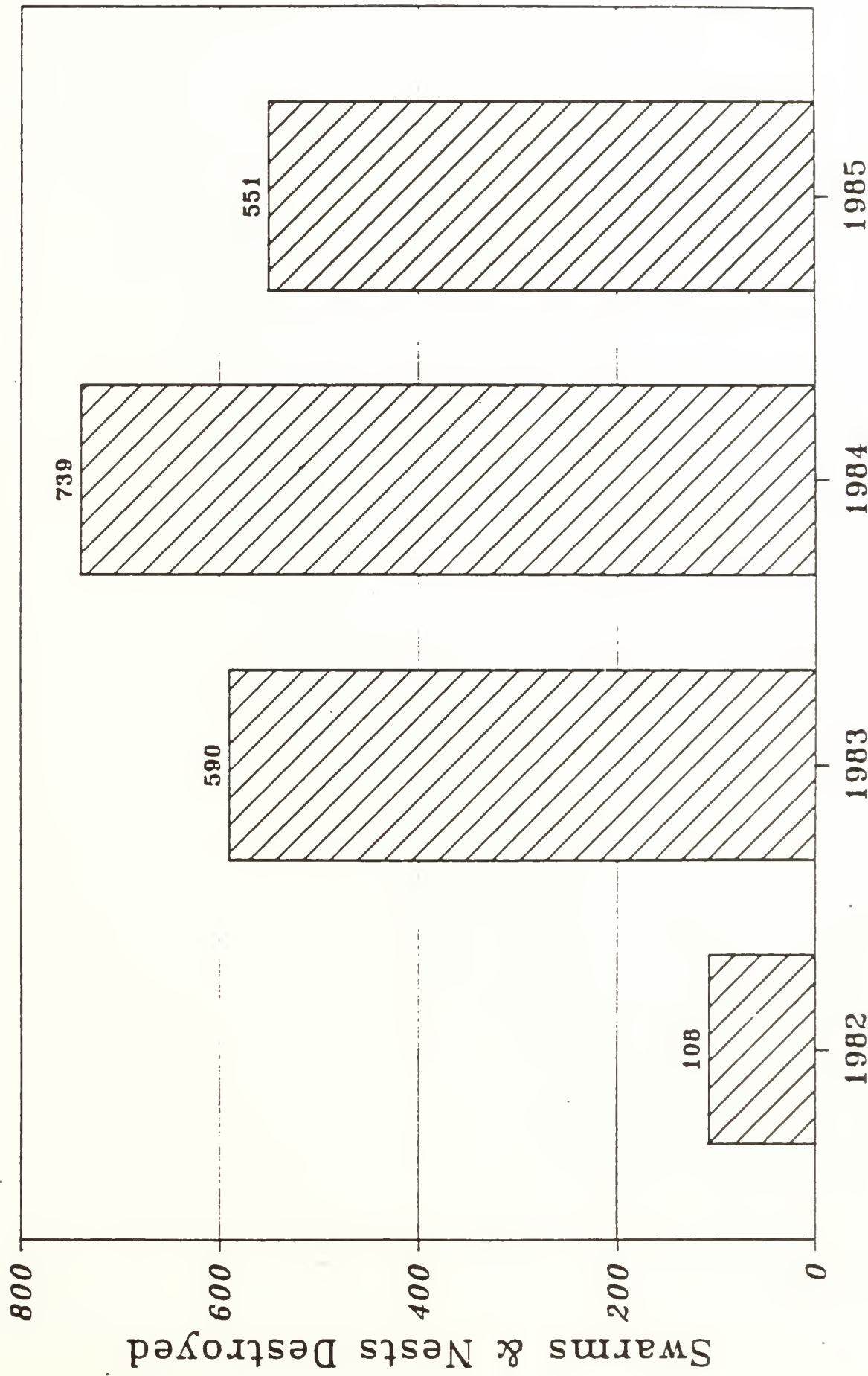
Distribution of copies: ☐ Chief, Grounds Mgt. Br.Sanitation Branch ☐ North ☐ SouthGrounds Mgt. Br. ☐ North ☐ South





# Panama Canal Area African Bee Control

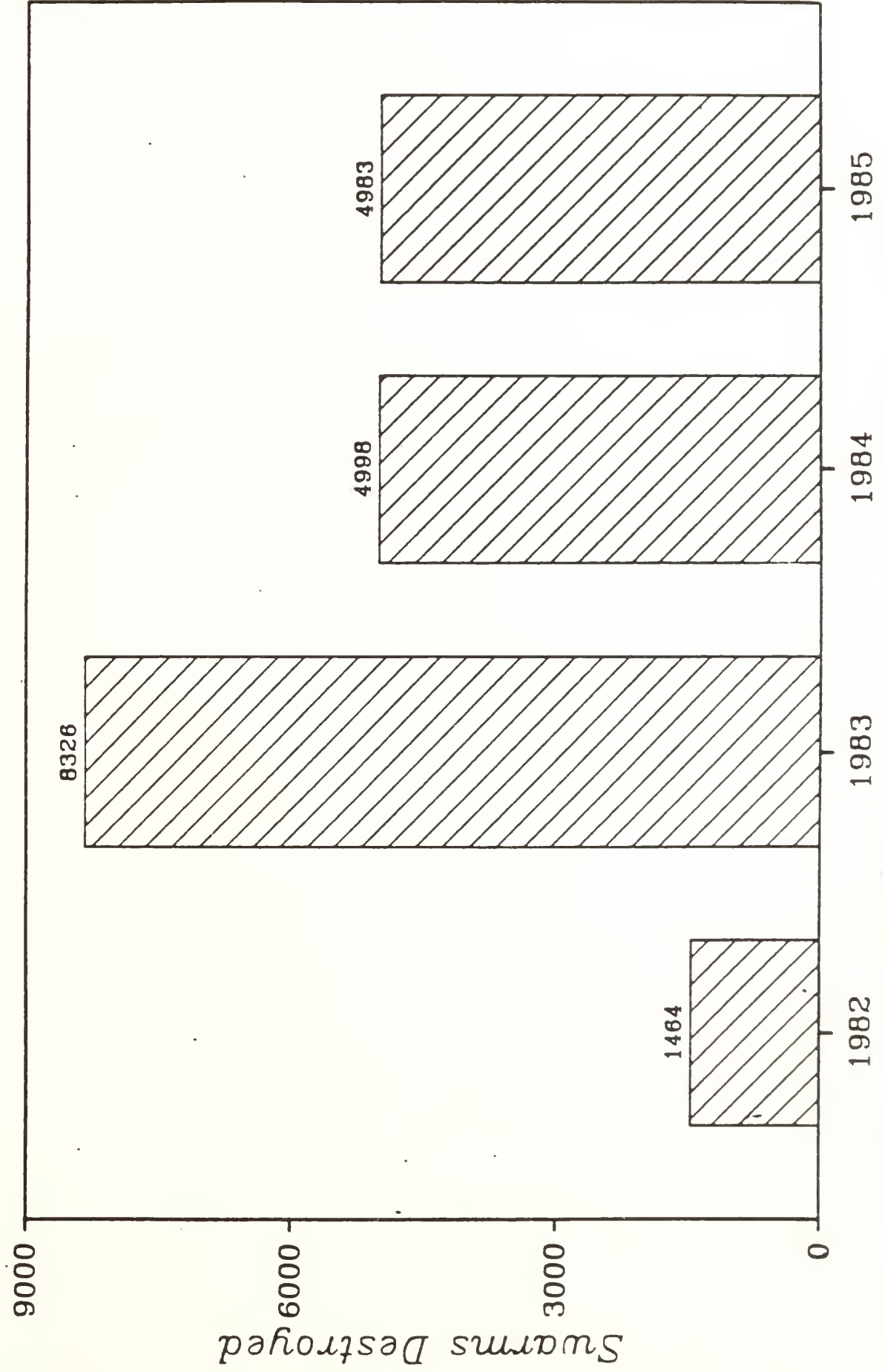
*Panama Canal Commission / U.S. Army / Air Force*





# Panama African Bee Control

Ministry of Agriculture

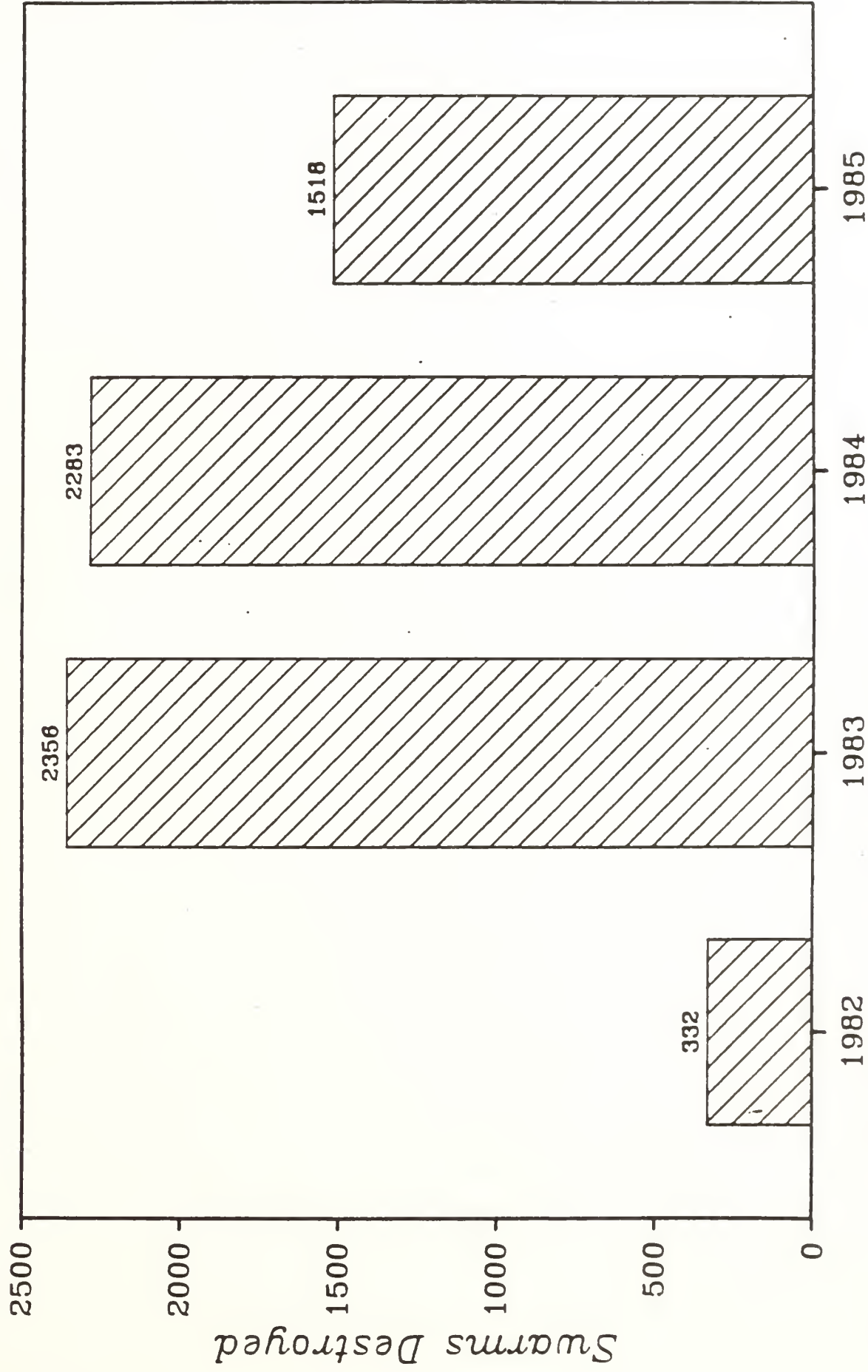


Combined Annual Data 1982 -- 1985



# Panama African Bee Control

*Fire Department (Bomberos) - Panama City*

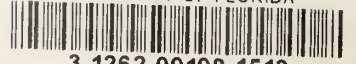


*Combined Annual Data 1982 - 1985*





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